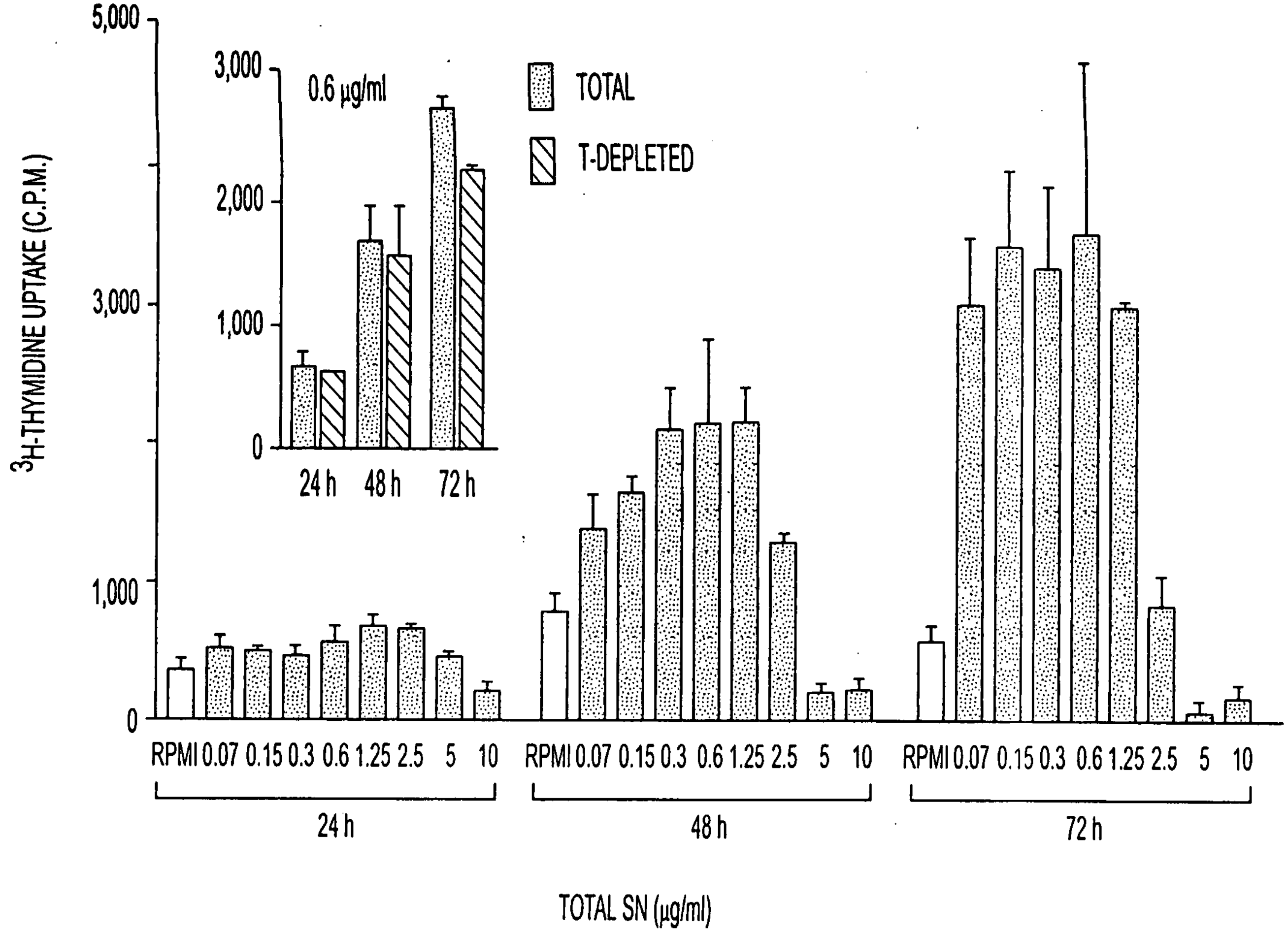

5,000
3,000
1,000
0
^{3}H-THYMIDINE UPTAKE (C.P.M.)
3,000
2,000
1,000
0
0.6 µg/ml
24 h 48 h 72 h
TOTAL
T-DEPLETED
RPMI 0.07 0.15 0.3 0.6 1.25 2.5 5 10
24 h
RPMI 0.07 0.15 0.3 0.6 1.25 2.5 5 10
48 h
RPMI 0.07 0.15 0.3 0.6 1.25 2.5 5 10
72 h
TOTAL SN (µg/ml)

FIG. 1A

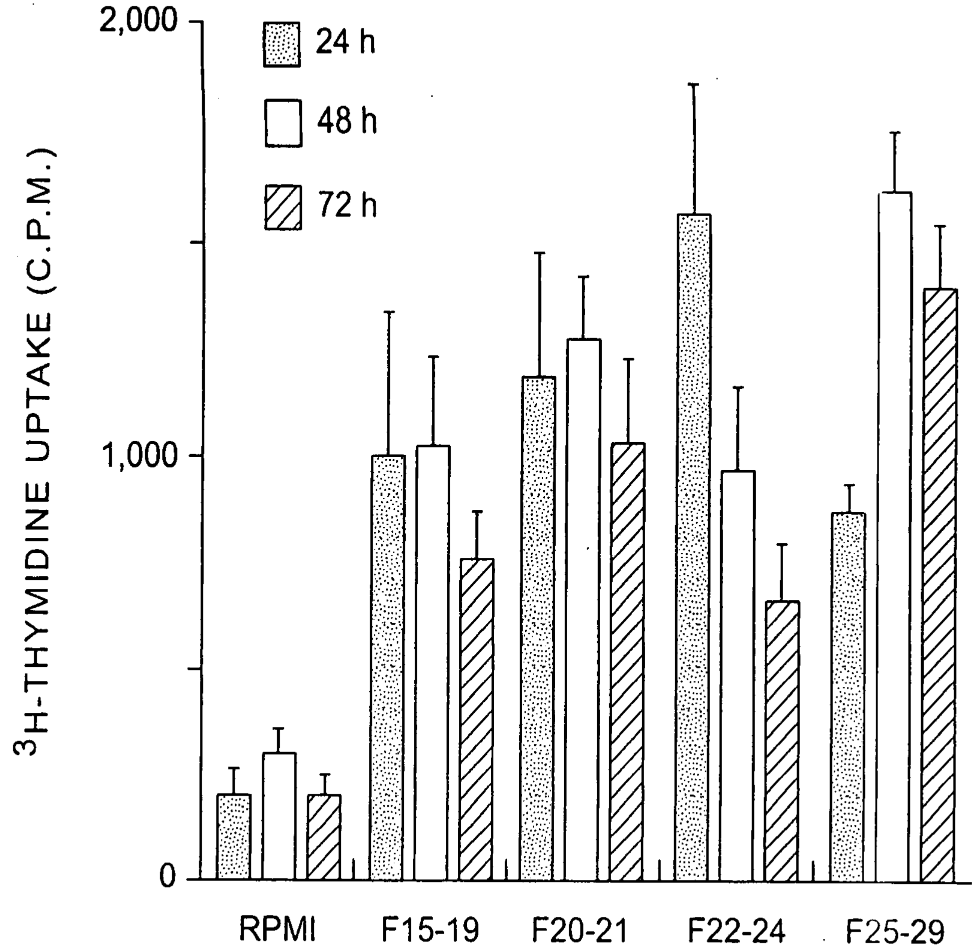

2,000
1,000
0
24 h
48 h
72 h
3H-THYMIDINE UPTAKE (C.P.M.)
RPMI
F15-19
F20-21
F22-24
F25-29

FIG. 1B

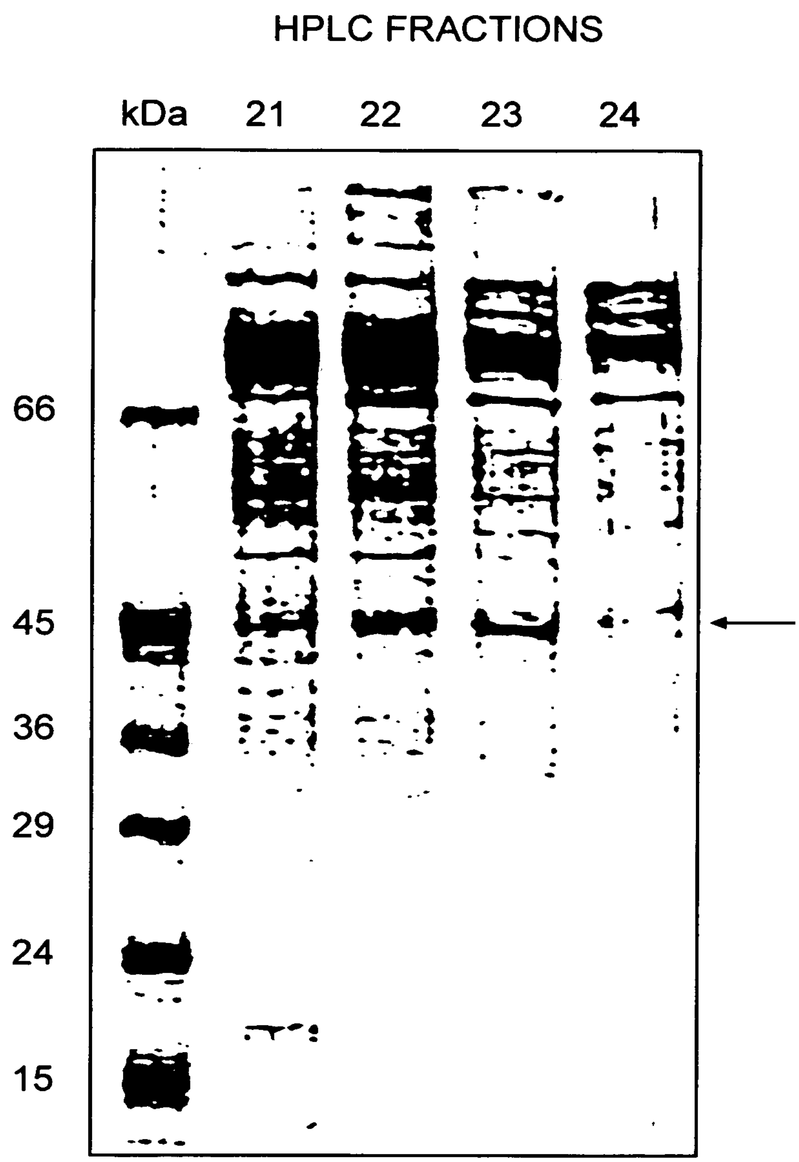


FIG. 1C

```
Tc  MRKSVCPKQKFFFSAFPFFFFFCVFPLISRTGQEKLLFDQKYKIIKGEKKEKKKNQRANRREHQQKREIMRFKKS   75
Cs  ---------------------------------------------------------------------MKFSKG    6
Pa  ------------------------------------------------------------------------MQR    3

Tc  FTCIDMHTEGEAARIVTSGLPHIPGSNMAEKKAYLQENMDYLRRGIMLEPRGHDDMFGAFLFDPIEEGADLGMVF  150
Cs  IHAIDSHTMGEPTRIVVGGIPQINGETMADKKKYLEDNLDYVRTALMHEPRGHNDMFGSIITSSNNKEADFGIIF   81
Pa  IRIIDSHTGGEPTRLVIGGFPDLGQGDMAERRRLLGERHDAWRAACILEPRGSDVLVGALLCAPVDPEACAGVIF   78

Tc  MDTGGYLNMCGHNSIAAVTAAVETGIVSVPAKATNVPVVLDTPAGLVRGTAHLQSGTESEVSNASIINVPSFLYQ  225
Cs  MDGGGYLNMCGHGSIGAATVAVETGMVEMVEPVTNIN--MEAPAGLIKAKVMVEN---EKVKEVSITNVPSFLYM  151
Pa  FNNSGYLGMCGHGTIGLVASLAHLGRIGPGV------HRIETPVGEVEATLH-------EDGSVSVRNVPAYRYR  140

Tc  QDVVVVLPKPYGEVRVDIAFGGNFFAIVPAEQLGIDISVQNLSRLQEAGELLRTEINRSVKVQHPQLPHINTVDC  300
Cs  EDAKLEVPSLNKTITFDISFGGSFFAIIHAKELGVKVETSQVDVLKKLGIEIRDLINEKIKVQHPELEHIKTVDL  226
Pa  RQVSVEVPGI-GRVSGDIAWGGNWFFLVAGH--GQRLAGDNLDALTAYTVAVQQALDD----QDIRGEDGGAIDH  208

Tc  VEIYGPPTNPEANYKNVVIFGNRQADR SPCGT GTSAKMATLYAKGQLRIGETFVYESILGSLFQGRV--LGEE  371
Cs  VEIYDEPSNPEATYKNVVIFGQGQVDR SPCGT GTSAKLATLYKKGHLKIDEKFVYESITGTMFKGRV--LEET  297
Pa  IELFAD--DPHADSRNFVLCPGKAYDR SPCGT GTSAKLACLAADGKLLPGQPWRQASVIGSQFEGRYEWLDGQ  279

Tc  RIPGVKVPVTKDAEEGMLVVTAEITGKAFIMGFNTMLFDPTDPFKNGFTLKQ* 423
Cs  KVGEFD------------AIIPEITGGAYITGFNHFVIDPEDPLKYGFTV*-- 335
Pa  PGGPIVPTIRGRAHVSAEATLLLADDDPFAWGIRR*----------------- 314
```

FIG. 2

Replacement Figure 3A
Divisional Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-02000

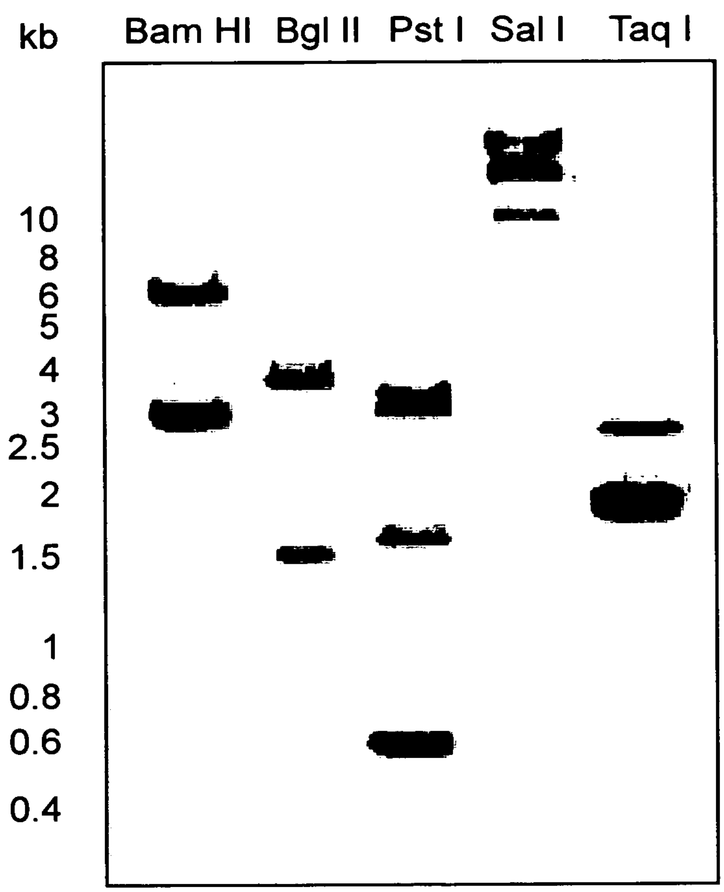


FIG. 3A

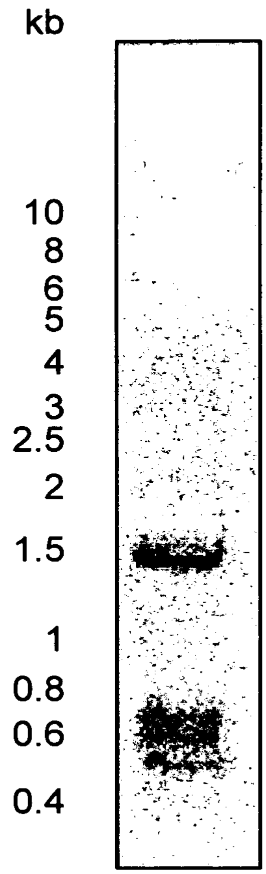


FIG. 3B

Replacement Figure 3C
Divisional Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-02000

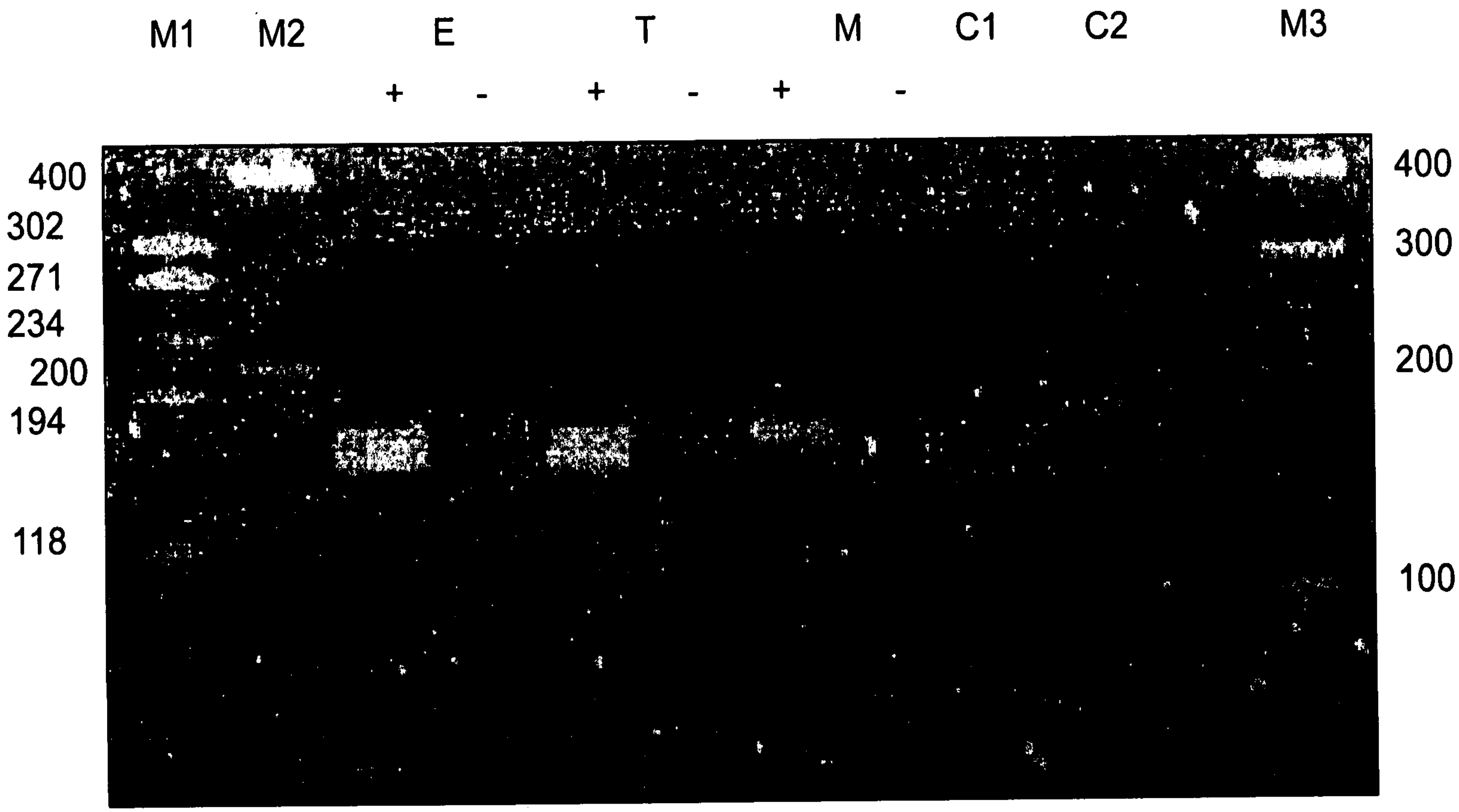


FIG. 3C

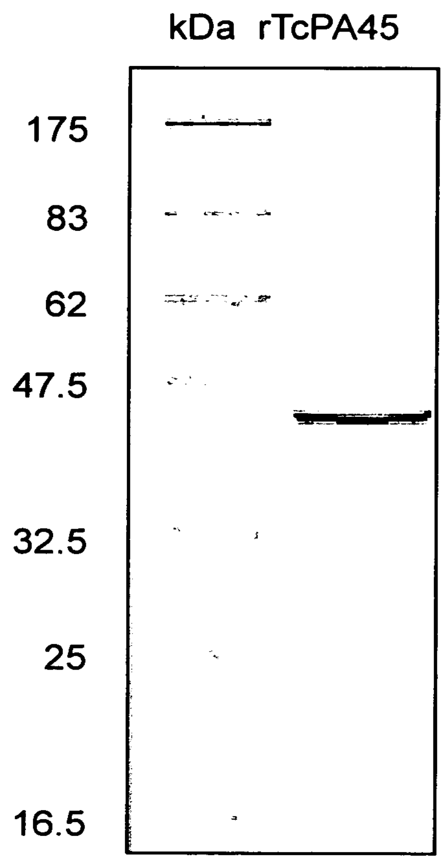


FIG. 4A

Replacement Figure 4B
Divisional Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-02000

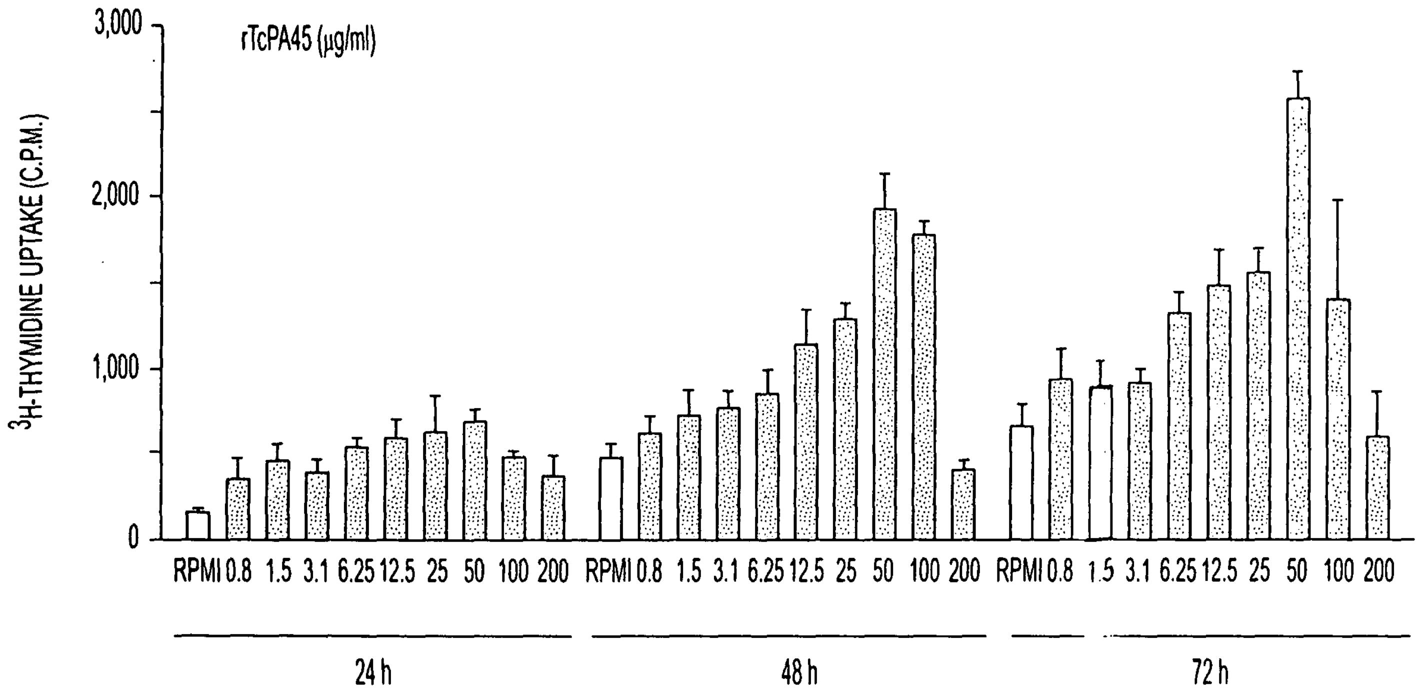


FIG. 4B

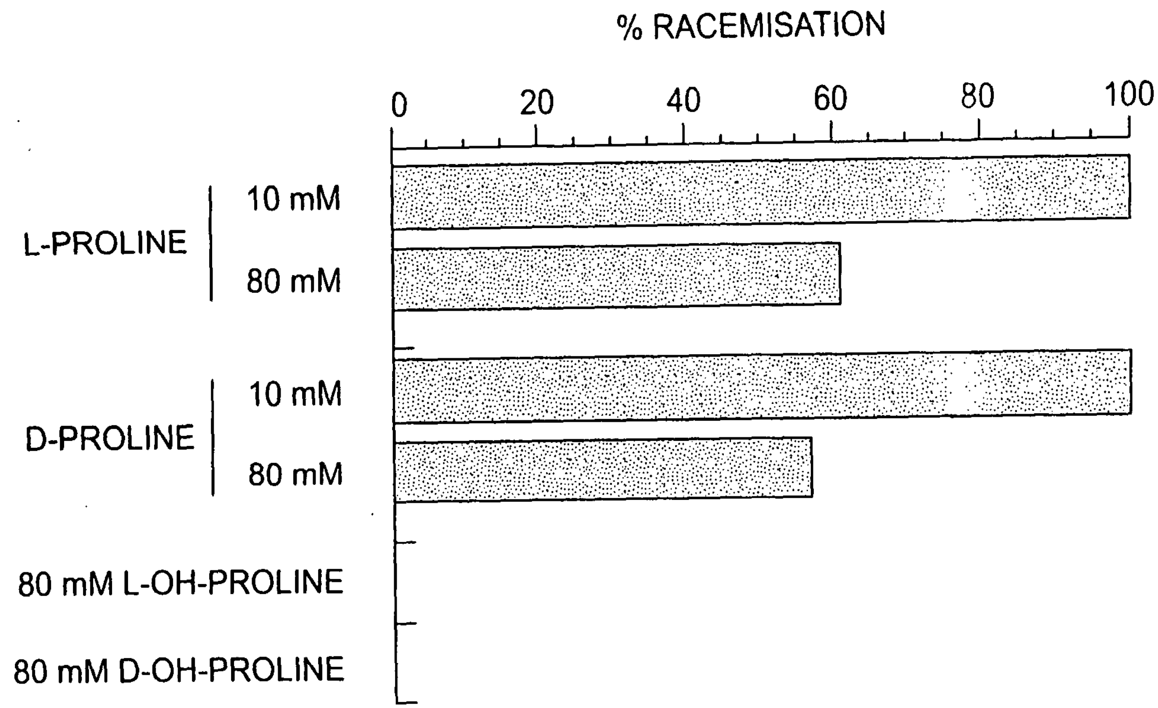

% RACEMISATION
0
20
40
60
80
100
L-PROLINE
10 mM
80 mM
D-PROLINE
10 mM
80 mM
80 mM L-OH-PROLINE
80 mM D-OH-PROLINE

FIG. 4C

Replacement Figure 4D
Divisional Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-02000

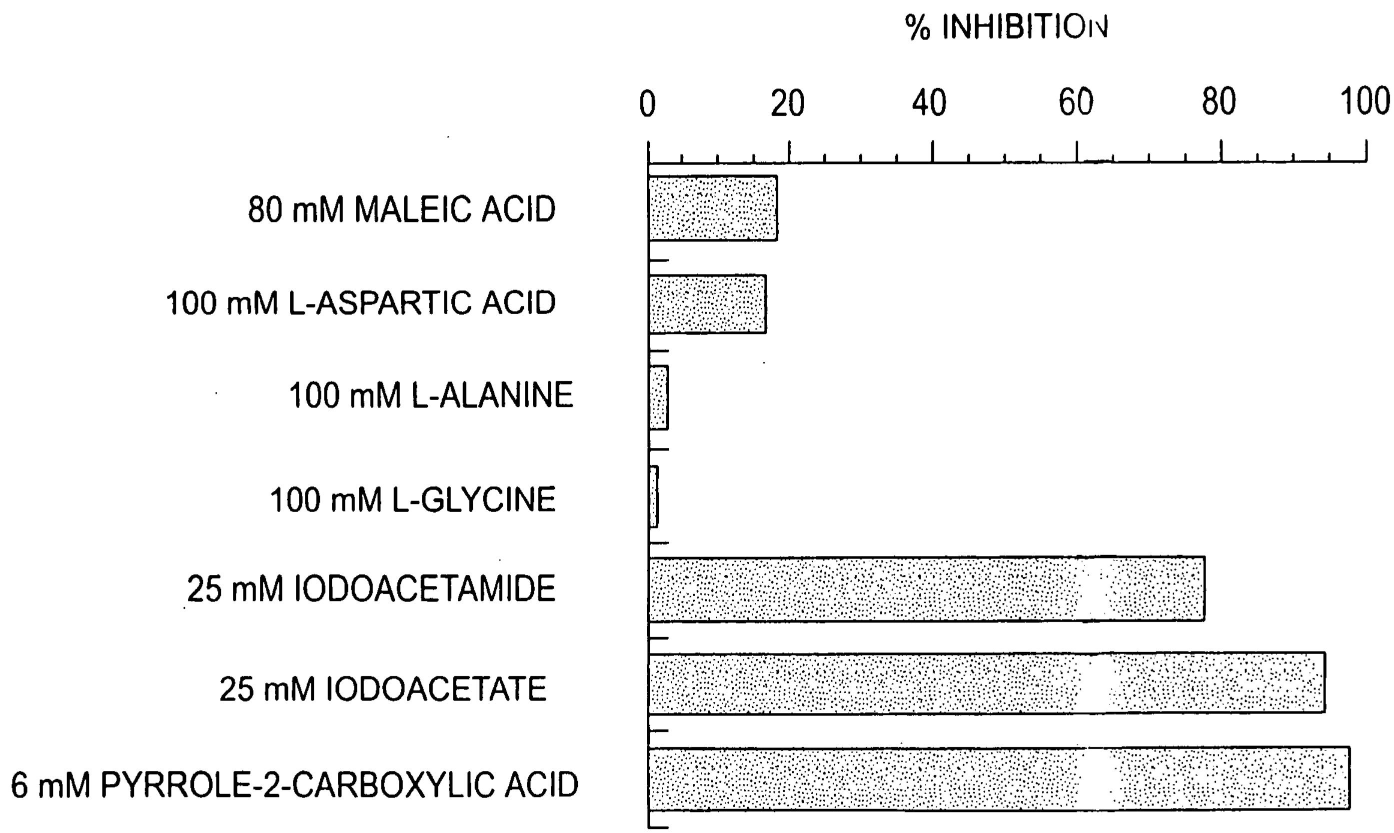


FIG. 4D

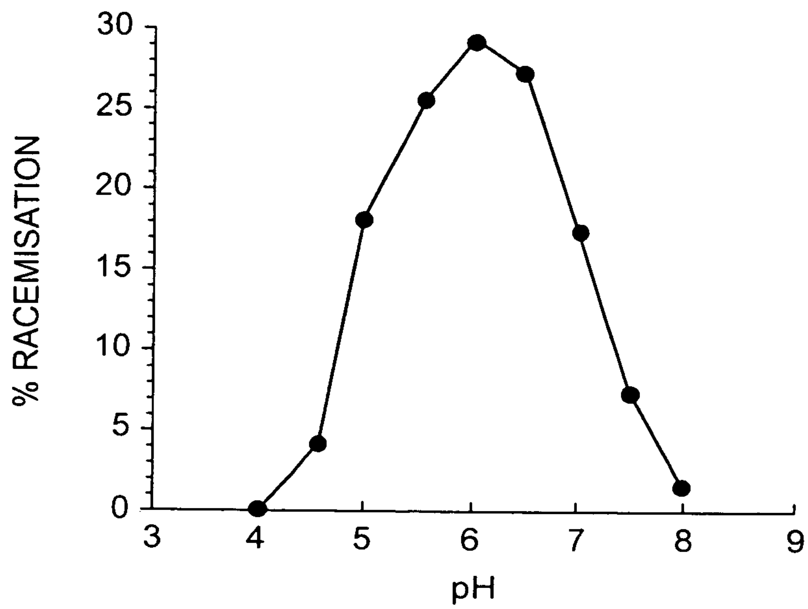


FIG. 4E

POLYPYRIMIDINE RICH REGION

SPLICE LEADER ACCEPTOR SITES

SIGNAL

```
CCTTTTTCTTTTTAAAAACAAAAAAAATTCCGGGGGGAATATGGAACAGGGTATATGCGTAAAAGTGTCTGTCCCAAACAAAAATTTTTT    90
                                                        M R K S V C P K Q K F F                 12
TTTTCCGCCTTCCCATTTTTTTTTTTTTTTGTGTGTTTCCCTTGATCTCTCGAACAGGGCAGGAAAAGCTTCTGTTTGACCAAAAATAT    180
F S A F P F F F F F C V F P L I S R T G Q E K L L F D Q K Y                                     42
AAAATTATTAAGGGCGAGAAAAAAGAAAAGAAAAAAAATCAACGAGCAAACAGGAGAGAACACCAACAAAAAAGGGAAATTATGCGATTT    270
K I I K G E K K E K K K N Q R A N R R E H Q Q K R E I M R F                                     72
AAGAAATCATTCACATGCATCGACATGCATACGGAAGGTGAAGCAGCACGGATTGTGACGAGTGGTTTGCCACACATTCCAGGTTCGAAT    360
K K S F T C I D M H T E G E A A R I V T S G L P H I P G S N                                     102
ATGGCGGAGAAGAAAGCATACCTGCAGGAAAACATGGATTATTTGAGGCGTGGCATAATGCTGGAACCACGTGGTCATGATGATATGTTT    430
M A E K K A Y L Q E N M D Y L R R G I M L E P R G H D D M F                                     132
GGAGCCTTTTTATTTGACCCTATTGAAGAAGGCGCTGACTTGGGCATGGTATTCATGGATACCGGTGGCTATTTAAATATGTGTGGACAT    520
G A F L F D P I E E G A D L G M V F M D T G G Y L N M C G H                                     162
AACTCAATTGCAGCGGTTACGGCGGCAGTTGAAACGGGAATTGTGAGCGTGCCGGCGAAGGCAACAAATGTTCCGGTTGTCCTGGACACA    610
N S I A A V T A A V E T G I V S V P A K A T N V P V V L D T                                     192
CCTGCGGGGTTGGTGCGCGGTACGGCACACCTTCAGAGTGGTACTGAGAGTGAGGTGTCAAATGCGAGTATTATCAATGTACCCTCATTT    700
P A G L V R G T A H L Q S G T E S E V S N A S I I N V P S F                                     222
TTGTATCAGCAGGATGTGGTGGTTGTGTTGCCAAAGCCCTATGGTGAAGTACGGGTTGATATTGCATTTGGAGGCAATTTTTTCGCCATT    790
L Y Q Q D V V V V L P K P Y G E V R V D I A F G G N F F A I                                     252
GTTCCCGCGGAGCAGTTGGGAATTGATATCTCCGTTCAAAACCTCTCCAGGCTGCAGGAGGCAGGAGAACTTCTGCGTACTGAAATCAAT    880
V P A E Q L G I D I S V Q N L S R L Q E A G E L L R T E I N                                     282
```

FIG. 5A

```
CGCAGTGTGAAGGTTCAGCACCCTCAGCTGCCCCATATTAACACTGTGGACTGTGTTGAGATATACGGTCCGCCAACGAACCCGGAGGCA   970
 R  S  V  K  V  Q  H  P  Q  L  P  H  I  N  T  V  D  C  V  E  I  Y  G  P  P  T  N  P  E  A   312
AACTACAAGAACGTTGTGATATTTGGCAATCGCCAGGCGGATCGCTCTCCATGTGGGACAGGCACCAGCGCCAAGATGGCAACACTTTAT  1060
 N  Y  K  N  V  V  I  F  G  N  R  Q  A  D  R  S  P  C  G  T  G  T  S  A  K  M  A  T  L  Y   342
GCCAAAGGCCAGCTTCGCATCGGAGAGACTTTTGTGTACGAGAGCATACTCGGCTCACTCTTCCAGGGCAGGGTACTTGGGGAGGAGCGA  1150
 A  K  G  Q  L  R  I  G  E  T  F  V  Y  E  S  I  L  G  S  L  F  Q  G  R  V  L  G  E  E  R   372
ATACCGGGGGTGAAGGTGCCGGTGACCAAAGATGCCGAGGAAGGGATGCTCGTTGTAACGGCAGAAATTACTGGAAAGGCTTTTATCATG  1240
 I  P  G  V  K  V  P  V  T  K  D  A  E  E  G  M  L  V  V  T  A  E  I  T  G  K  A  F  I  M   402
GGTTTCAACACCATGCTGTTTGACCCAACGGATCCGTTTAAGAACGGATTCACATTAAAGCAGTAGATCTGGTAGAGCACAGAAACTATT  1330
 G  F  N  T  M  L  F  D  P  T  D  P  F  K  N  G  F  T  L  K  Q                              423
GGGGAACACGTGCGAACAGGTGCTGCTACGTGAAGGGTATTGAATGAATCGTTTTTTTTTATTTTTATTTTTTATTTTTATTAGTGCATT  1420

ATTATTAAATTTTTTTTTTGTTTTGGGGTTTCAACGGTACCGCGTTGGGAGCAGGGAAGCGATAGCGGCCGGACAATTTTTTGCTTTTAT  1510

TTTCATTTTCATCTTCCTACCCAACCCCCTTGGTTCCACCGGTCGCGGCGGGGTCTTGTGGGTGGAGGAGTCCTAAATCCCGCACCTCGG  1600

AGGAATAAACATATTTCAATTTCATATCTTGGAATCAAAAGGCAT                                              1651
```

POLYADENILATION SITE

OBS: UNDERLINED THE SEQUENCED PEPTIDES USED TO DEDUCE DEGENERATED PRIMERS FOR CLONING

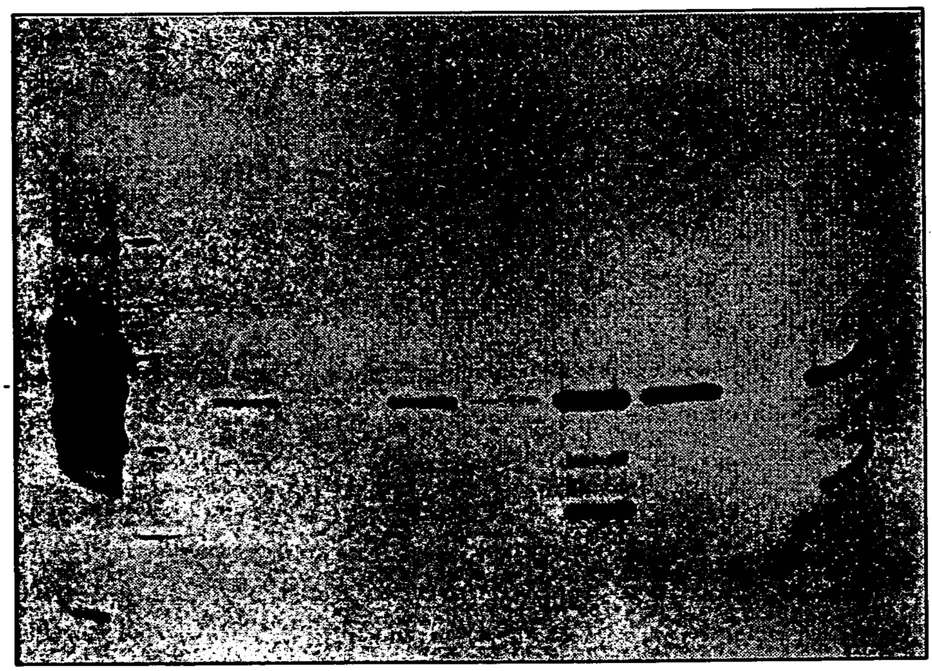
NUCLEOTIDE SEQUENCE AND PEPTIDE SEQUENCE TcPA45

FIG. 5B

WESTERN BLOT

rTcPA45 1 2 3 4 5 6 7 8

38kDa



LANE 3

SOLUBLE FRACTION OF EPIMASTIGOTES EXTRACT (CYTOSOLIC)
REVEALED WITH ANTIBODY DIRECTED TO rTcPA45

.... DEMONSTRATES THE EXISTANCE OF AN INTRACYTOPLASMIC FORM OF TcPA45 IN THE PARASITE

FIG. 6

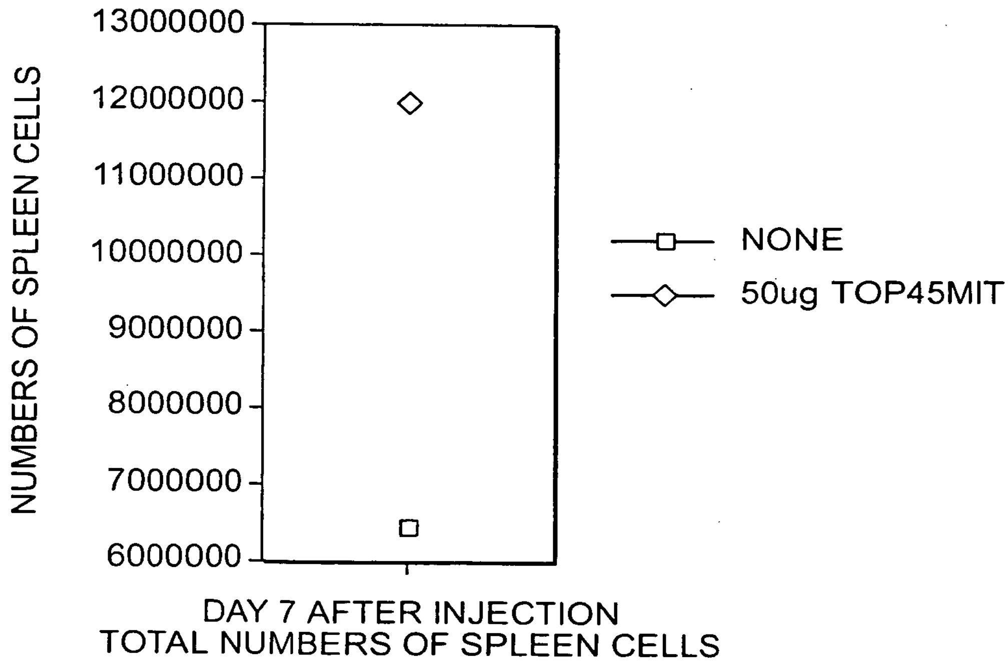

13000000
12000000
11000000
10000000
9000000
8000000
7000000
6000000
NUMBERS OF SPLEEN CELLS
NONE
50ug TOP45MIT
DAY 7 AFTER INJECTION
TOTAL NUMBERS OF SPLEEN CELLS

FIG. 7

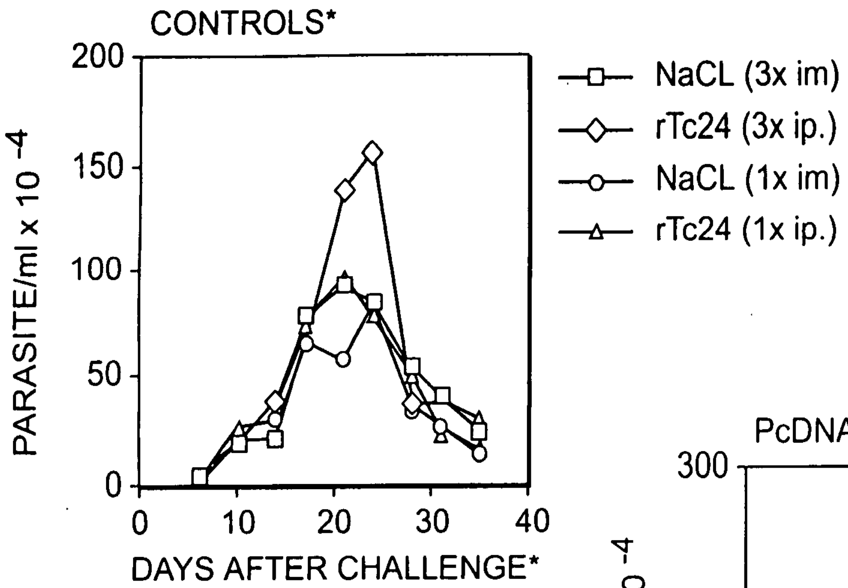

CONTROLS*
PARASITE/ml x 10 -4
200
150
100
50
0
0
10
20
30
40
DAYS AFTER CHALLENGE*
NaCL (3x im)
rTc24 (3x ip.)
NaCL (1x im)
rTc24 (1x ip.)

FIG. 8A

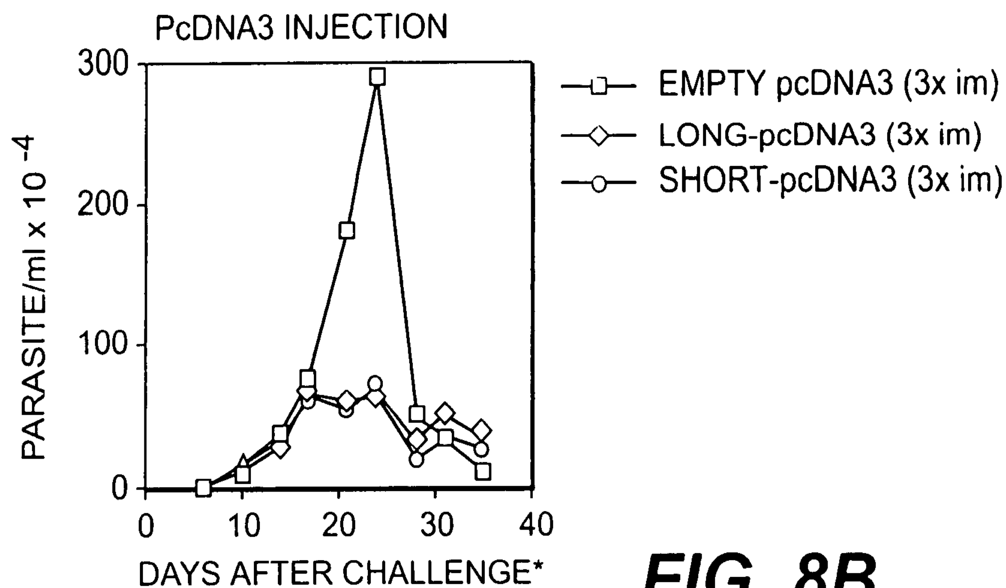

PcDNA3 INJECTION
PARASITE/ml x 10 -4
300
200
100
0
0
10
20
30
40
DAYS AFTER CHALLENGE*
EMPTY pcDNA3 (3x im)
LONG-pcDNA3 (3x im)
SHORT-pcDNA3 (3x im)

FIG. 8B

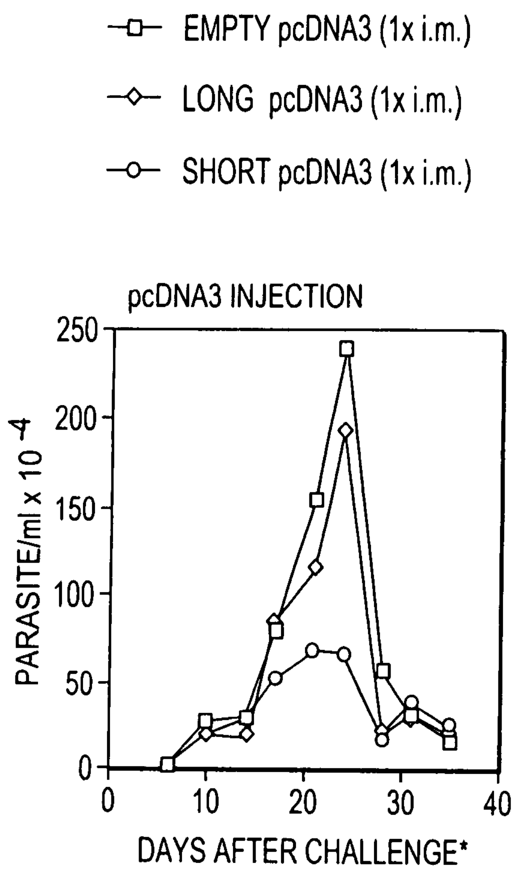


FIG. 8C

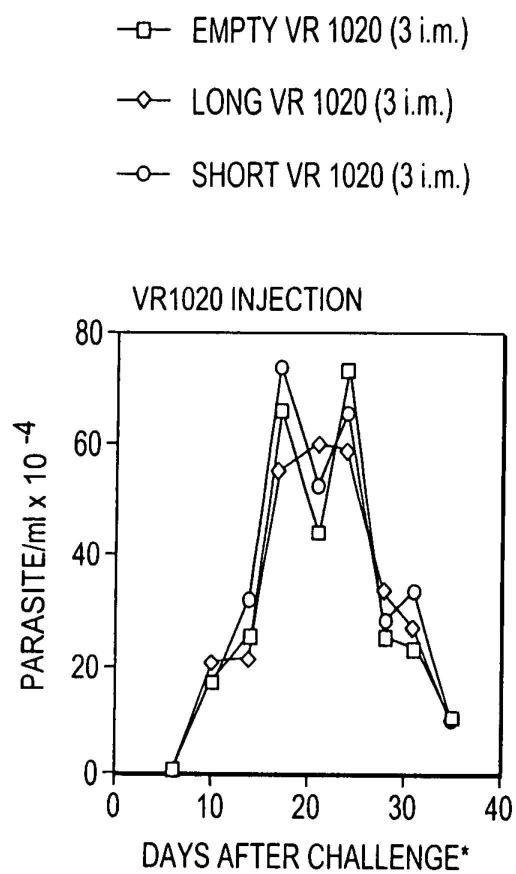


FIG. 8D

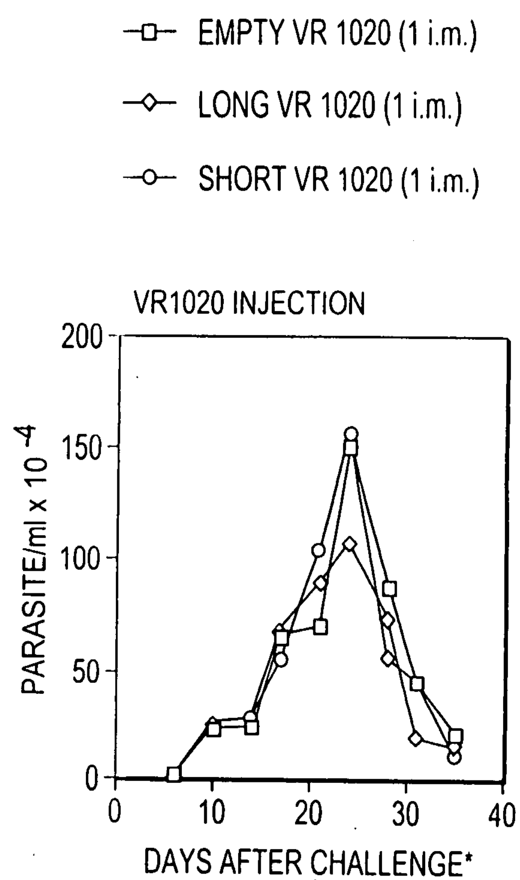


FIG. 8E

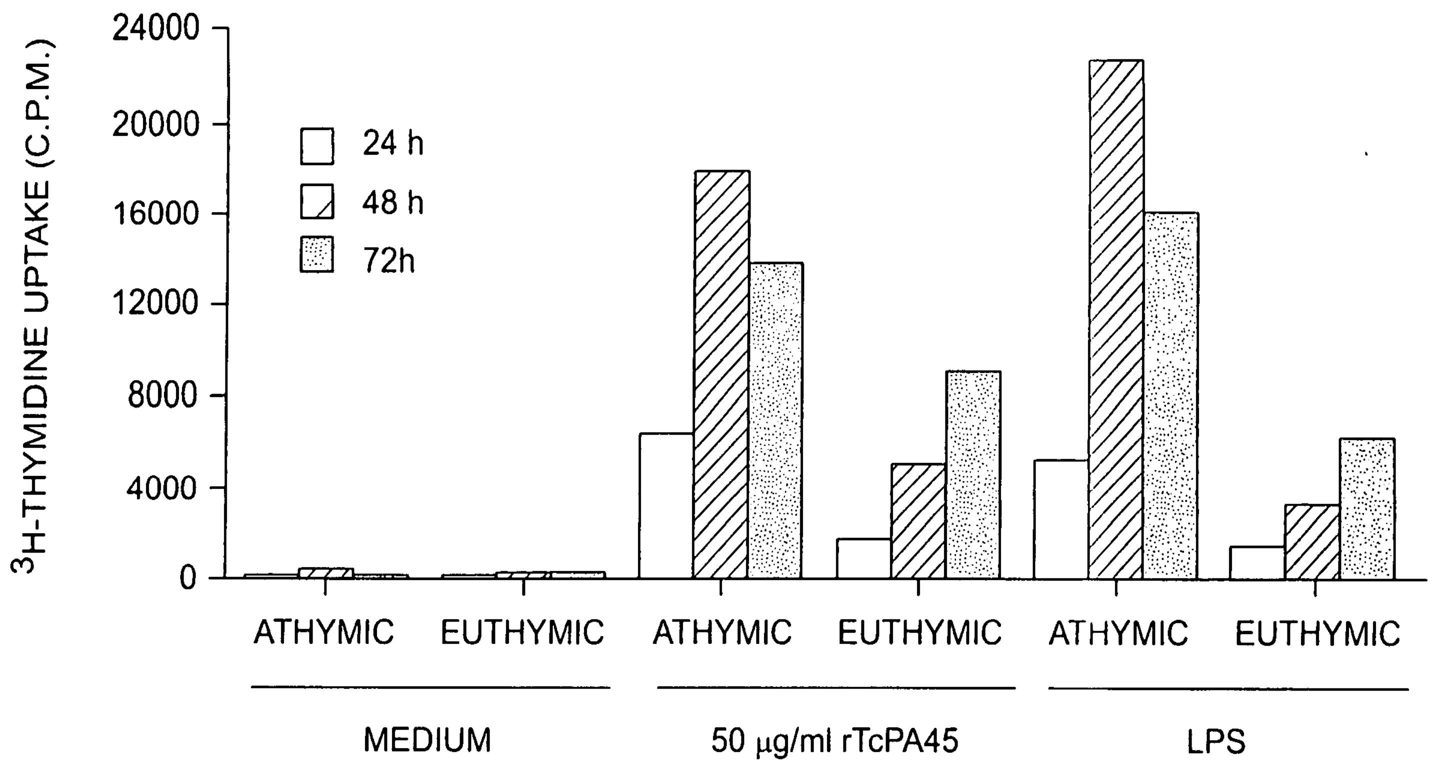

3H-THYMIDINE UPTAKE (C.P.M.)
24000
20000
16000
12000
8000
4000
0
24 h
48 h
72h
ATHYMIC
EUTHYMIC
ATHYMIC
EUTHYMIC
ATHYMIC
EUTHYMIC
MEDIUM
50 μg/ml rTcPA45
LPS

FIG. 9

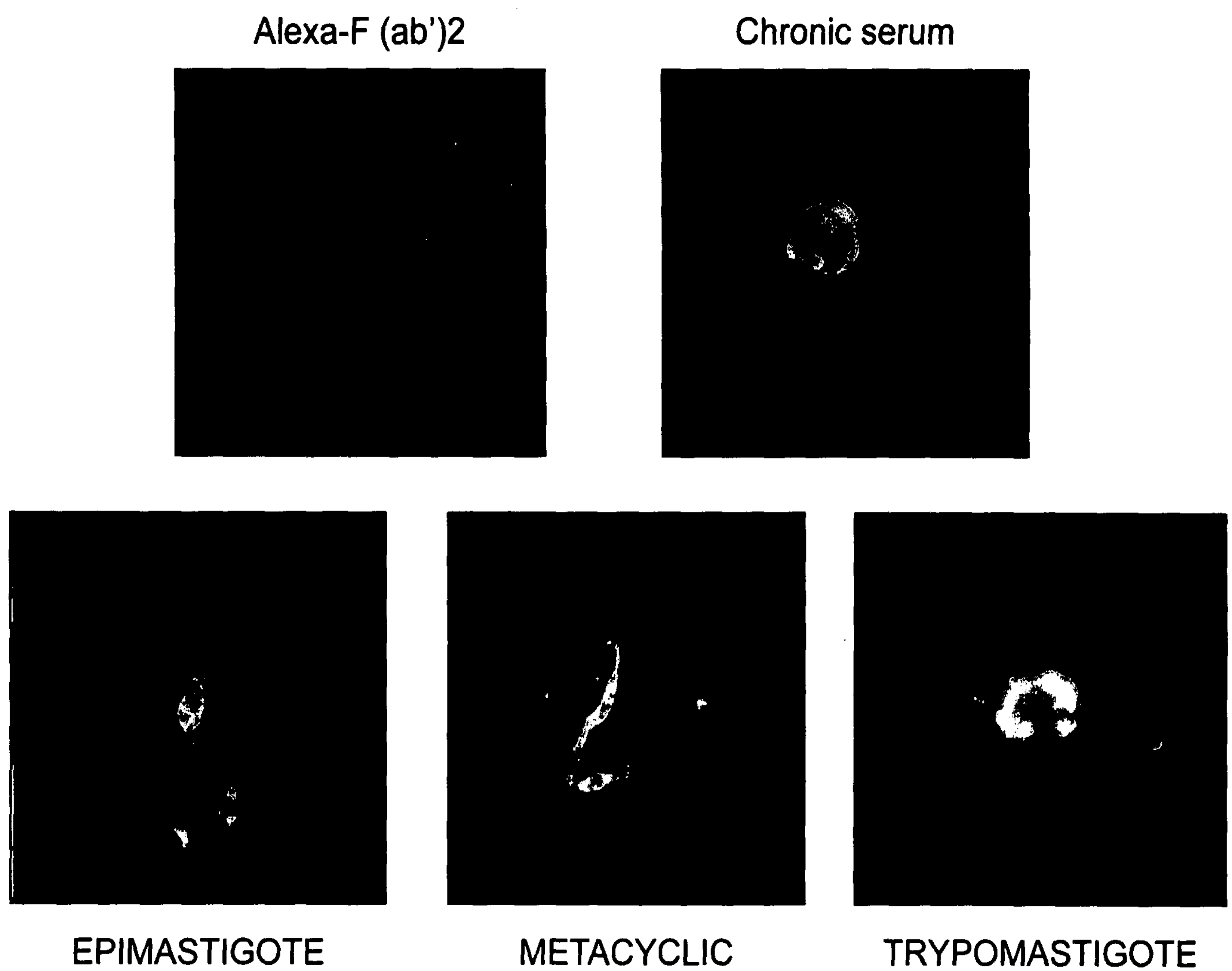

Alexa-F (ab')2
Chronic serum
EPIMASTIGOTE
METACYCLIC
TRYPOMASTIGOTE

FIG. 10A

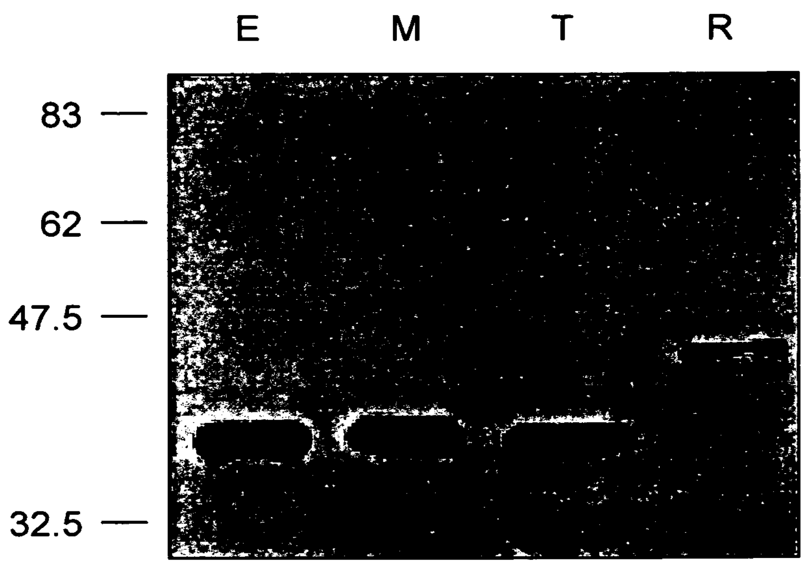


FIG. 10B

Replacement Figure 10C
Divisional Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-02000

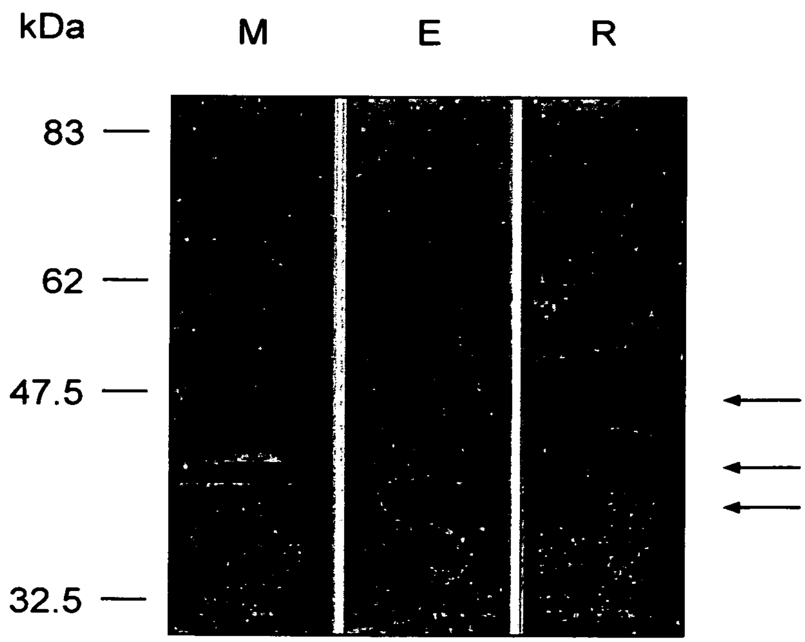


FIG. 10C

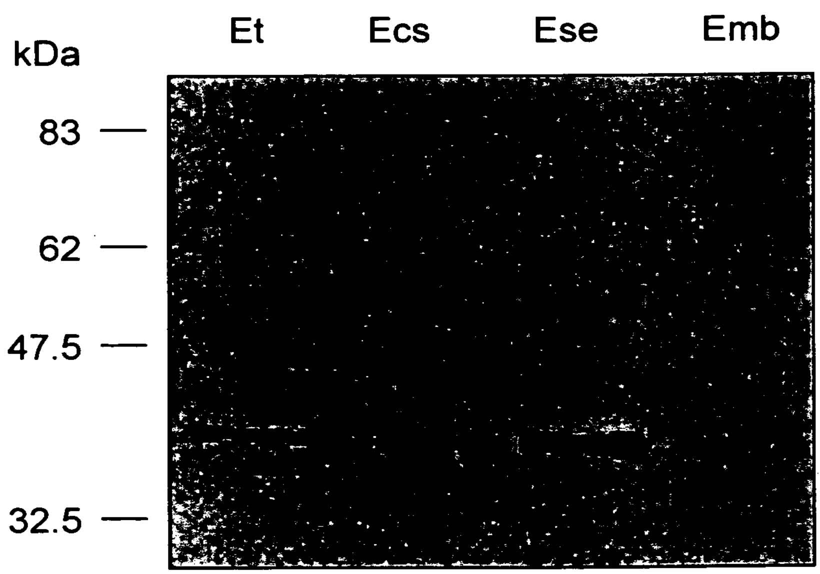


FIG. 10D

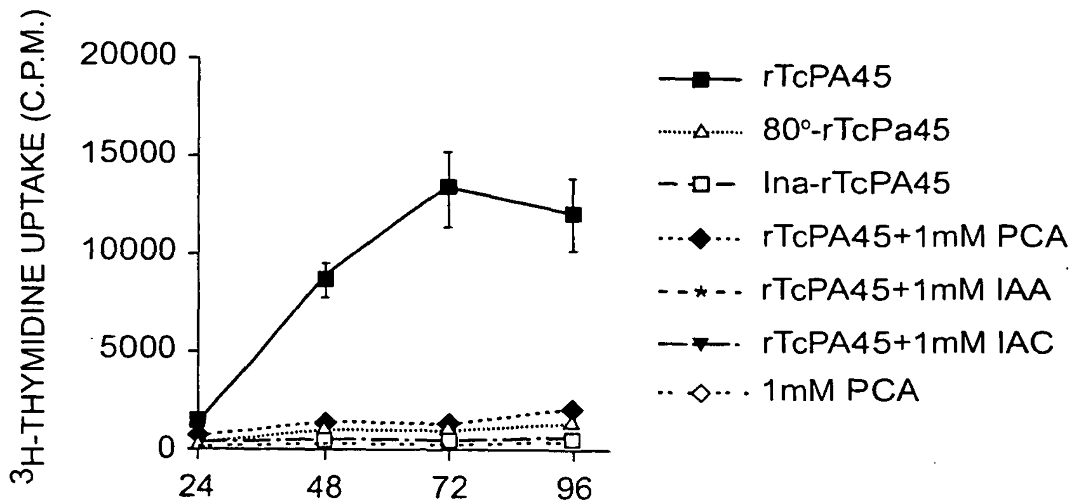

3H-THYMIDINE UPTAKE (C.P.M.)
20000
15000
10000
5000
0
24
48
72
96
rTcPA45
80°-rTcPa45
Ina-rTcPA45
rTcPA45+1mM PCA
rTcPA45+1mM IAA
rTcPA45+1mM IAC
1mM PCA

FIG. 11A

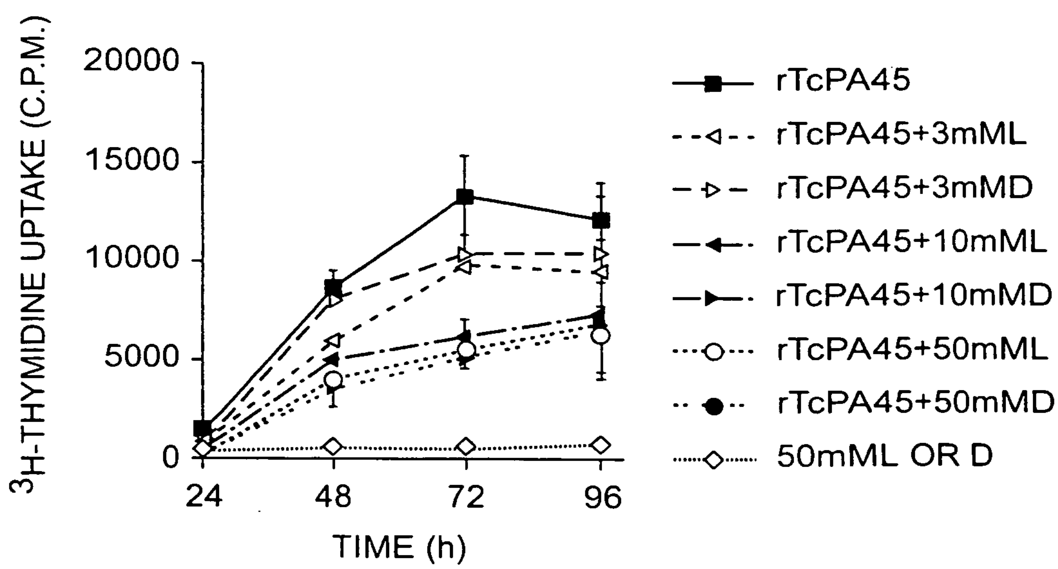

3H-THYMIDINE UPTAKE (C.P.M.)
20000
15000
10000
5000
0
24
48
72
96
TIME (h)
rTcPA45
rTcPA45+3mML
rTcPA45+3mMD
rTcPA45+10mML
rTcPA45+10mMD
rTcPA45+50mML
rTcPA45+50mMD
50mML OR D

FIG. 11B

Replacement Figure 12
Divisional Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-02000

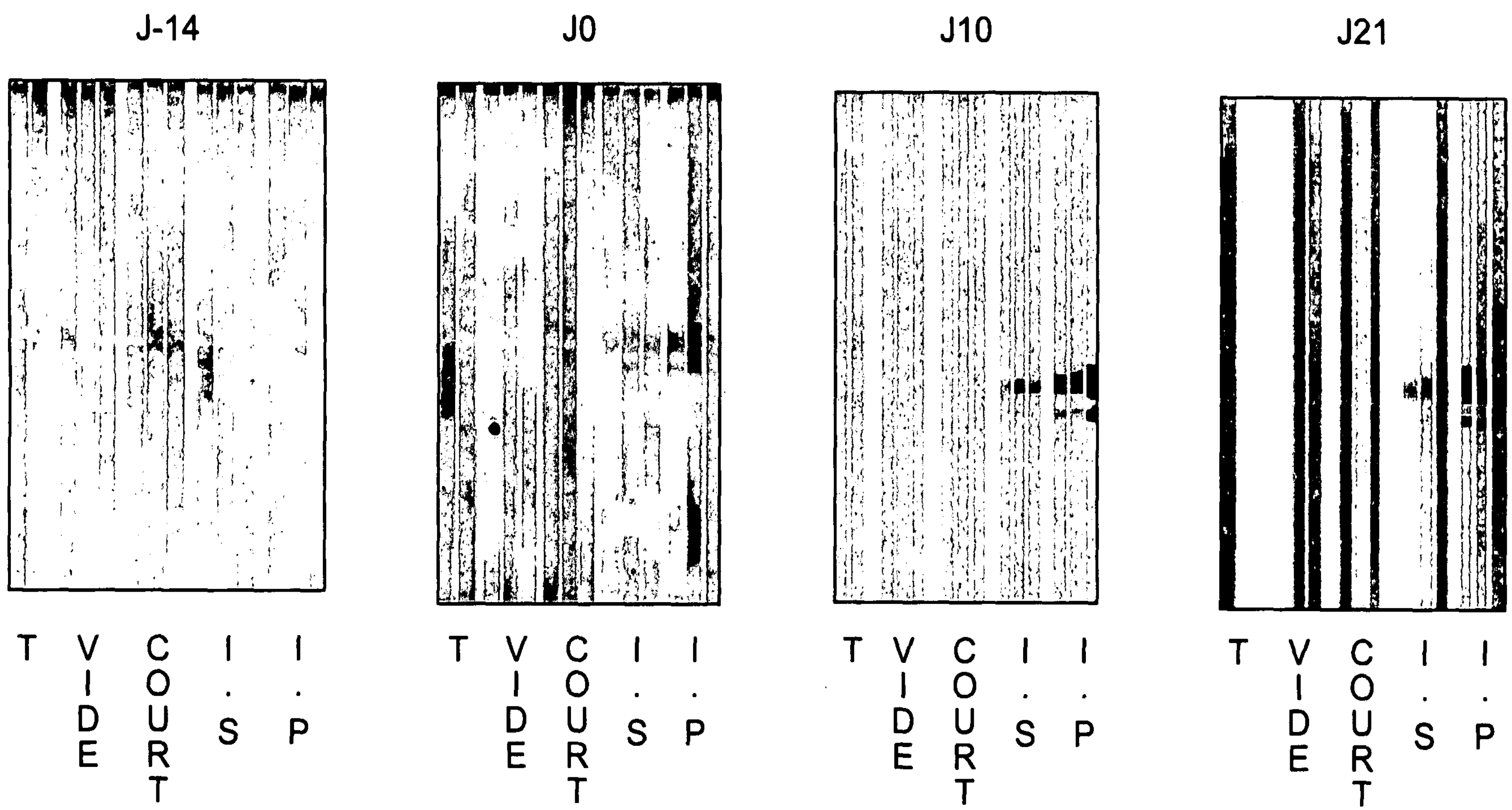


FIG. 12

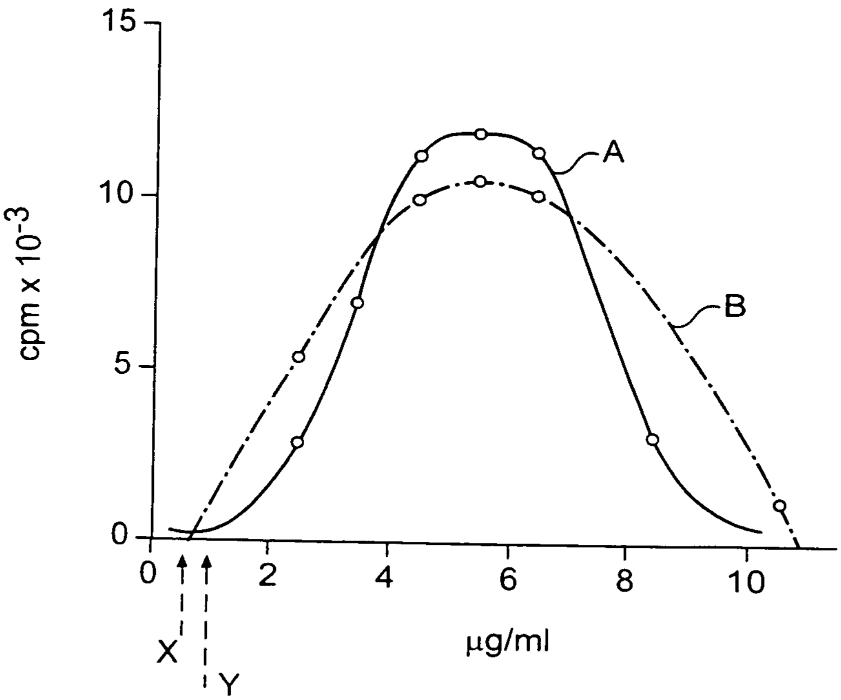


FIG. 13

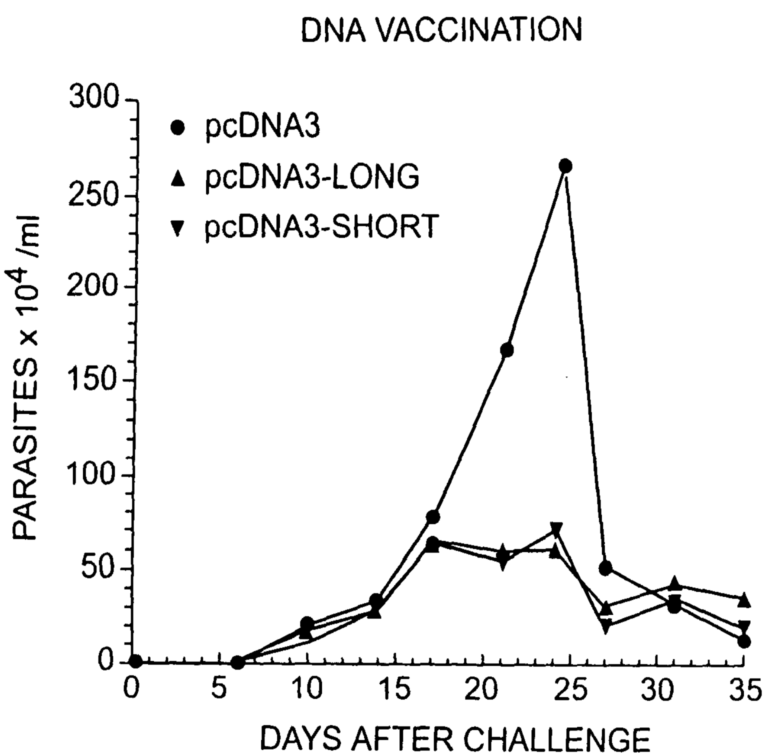


FIG. 14A

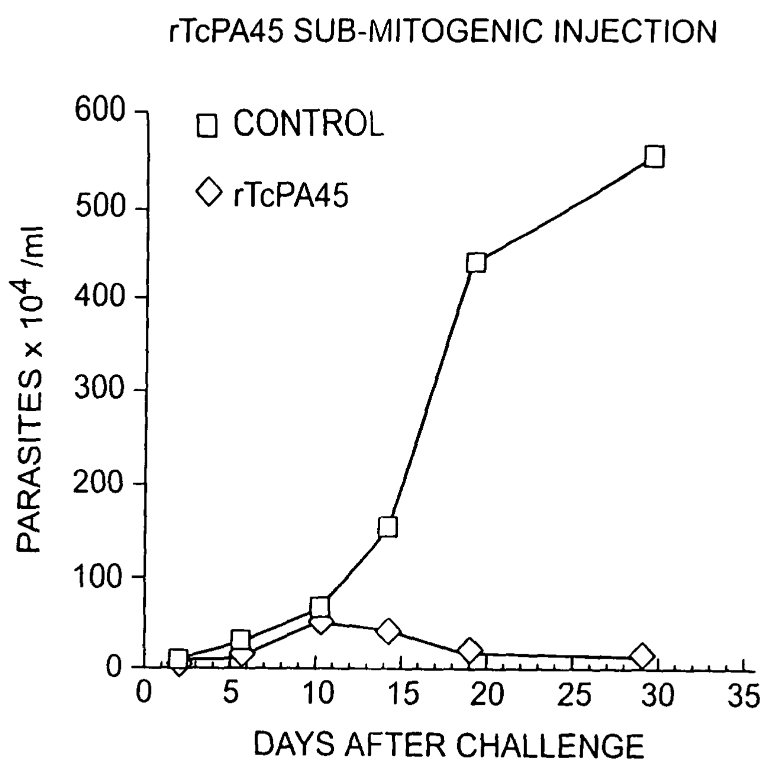


FIG. 14B

SEQ ID NO:2

```
Tc                                     RTGQEKLLFDQKYKIIKGEKKEKKKNQRANRREHQQKREIMRFKKS   75
Tc  FTCIDMHTEGEAARIVTSGLPHIPGSNMAEKKAYLQENMDYLRRGIMLEPRGHDDMFGAFLFDPIEEGADLGMVF  150
Tc  MDTGGYLNMCGHNSIAAVTAAVETGIVSVPAKATNVPVVLDTPAGLVRGTAHLQSGTESEVSNASIINVPSFLYQ  225
Tc  QDVVVVLPKPYGEVRVDIAFGGNFFAIVPAEQLGIDISVQNLSRLQEAGELLRTEINRSVKVQHPQLPHINTVDC  300
Tc  VEIYGPPTNPEANYKNVVIFGNRQADR SPCGT GTSAKMATLYAKGQLRIGETFVYESILGSLFQGRV--LGEE  371
Tc    RIPGVKVPVTKDAEEGMLVVTAEITGKAFIMGFNTMLFDPTDPFKNGFTLKQ*  423
```

FIG. 15

SEQ ID NO:4

Tc	MRFKKS	75
Tc	FTCIDMHTEGEAARIVTSGLPHIPGSNMAEKKAYLQENMDYLRRGIMLEPRGHDDMFGAFLFDPIEEGADLGMVF	150
Tc	MDTGGYLNMCGHNSIAAVTAAVETGIVSVPAKATNVPVVLDTPAGLVRGTAHLQSGTESEVSNASIINVPSFLYQ	225
Tc	QDVVVVLPKPYGEVR*VDIAFGGNF*FAIVPAEQLGIDISVQNLSRLQEAGELLRTEINRSVKVQHPQLPHINTVDC	300
Tc	VEIYGPPTNPEANYK*NVVIFGNR*QADR SPCGT GTSAKMATLYAKGQLRIGETFVYESILGSLFQGRV--LGEE	371
Tc	RIPGVKVPVTKDAEEGMLVVTAEITGKAFIMGFNTMLFDPTDPFKNGFTLKQ*	423

FIG. 16

SEQ ID NO:7

POLYPYRIMIDINE RICH REGION

SPLICE LEADER ACCEPTOR SITES

SIGNAL PEPTIDE

```
CCTTTTTCTTTTTAAAAACAAAAAAAATTCCGGGGGGAATATGGAACAGGGTATATGCGTAAAAGTGTCTGTCCCAAACAAAAATTTTTT   90
                                                        M  R  K  S  V  C  P  K  Q  K  F  F   12
TTTTCCGCCTTCCCATTTTTTTTTTTTTTTTGTGTGTTTCCCTTGATCTCTCGAACAGGGCAGGAAAAGCTTCTGTTTGACCAAAAATAT  180
 F  S  A  F  P  F  F  F  F  F  C  V  F  P  L  I  S  R  T  G  Q  E  K  L  L  F  D  Q  K  Y   42
AAAATTATTAAGGGCGAGAAAAAAGAAAAGAAAAAAAAATCAACGAGCAAACAGGAGAGAACACCAACAAAAAAGGGAAATTATGCGATTT  270
 K  I  I  K  G  E  K  K  E  K  K  K  N  Q  R  A  N  R  R  E  K  Q  Q  K  R  E  I  M  R  F   72
AAGAAATCATTCACATGCATCGACATGCATACGGAAGGTGAAGCAGCACGGATTGTGACGAGTGGTTTGCCACACATTCCAGGTTCGAAT  360
 K  K  S  F  T  C  I  D  M  H  T  E  G  E  A  A  R  I  V  T  S  G  L  P  H  I  P  G  S  N  102
ATGGCGGAGAAGAAAGCATACCTGCAGGAAAACATGGATTATTTGAGGCGTGGCATAATGCTGGAACCACGTGGTCATGATGATATGTTT  430
 M  A  E  K  K  A  Y  L  Q  E  N  M  D  Y  L  R  R  G  I  M  L  E  P  R  G  K  D  D  M  F  132
GGAGCCTTTTTATTTGACCCTATTGAAGAAGGCGCTGACTTGGGCATGGTATTCATGGATACCGGTGGCTATTTAAATATGTGTGGACAT  520
 G  A  F  L  F  D  P  I  E  E  G  A  D  L  G  M  V  F  M  D  T  G  G  Y  L  N  M  C  G  H  162
AACTCAATTGCAGCGGTTACGGCGGCAGTTGAAACGGGAATTGTGAGCGTGCCGGCGAAGGCAACAAATGTTCCGGTTGTCCTGGACACA  610
 N  S  I  A  A  V  T  A  A  V  E  T  G  I  V  S  V  P  A  K  A  T  N  V  P  V  V  L  D  T  192
CCTGCGGGGTTGGTGCGCGGTACGGCACACCTTCAGAGTGGTACTGAGAGTGAGGTGTCAAATGCGAGTATTATCAATGTACCCTCATTT  700
 P  A  G  L  V  R  G  T  A  R  L  Q  S  G  T  E  S  E  V  S  N  A  S  I  I  N  V  P  S  F  222
TTGTATCAGCAGGATGTGGTGGTTGTGTTGCCAAAGCCCTATGGTGAAGTACGGGTTGATATTGCATTTGGAGGCAATTTTTTCGCCATT  790
 L  Y  Q  Q  D  V  V  V  V  L  P  K  P  Y  G  E  V  R  V  D  I  A  F  G  G  N  F  F  A  I  252
```

FIG. 17A

GTTCCCGCGGAGCAGTTGGGAATTGATATCTCCGTTCAAAACCTCTCCAGGCTGCAGGAGGCAGGAGAACTTCTGCGTACTGAAATCAAT 880

V P A E Q L G I D I S V Q N L S R L Q E A G E L L R T E I N 282

CGCAGTGTGAAGGTTCAGCACCCTCAGCTGCCCCATATTAACACTGTGGACTGTGTTGAGATATACGGTCCGCCAACGAACCCGGAGGCA 970

R S V K V Q H P Q L P H I N T V D C V E I Y G P P T N P E A 312

AACTACAAGAACGTTGTGATATTTGGCAATCGCCAGGCGGATCGCTCTCCATGTGGGACAGGCACCAGCGCCAAGATGGCAACACTTTAT 1060

N Y K <u>N V V I F G N R</u> Q A D R S P C G T G T S A K <u>M A T L Y</u> 342

GCCAAAGGCCAGCTTCGCATCGGAGAGACTTTTGTGTACGAGAGCATACTCGGCTCACTCTTCCAGGGCAGGGTACTTGGGGAGGAGCGA 1150

<u>A K</u> G Q L R I G E T F V Y E S I L G S L F Q G R V L G E E R 372

ATACCGGGGGTGAAGGTGCCGGTGACCAAAGATGCCGAGGAAGGGATGCTCGTTGTAACGGCAGAAATTACTGGAAAGGCTTTTATCATG 1240

I P G V K V P V T K D A E E G M L V V T A E I T G K A F I M 402

GGTTTCAACACCATGCTGTTTGACCCAACGGATCCGTTTAAGAACGGATTCACATTAAAGCAGTAGATCTGGTAGAGCACAGAAACTATT 1330

G F N T M L F D P T D P F K N G F T L K Q * 423

GGGGAACACGTGCGAACAGGTGCTGCTACGTGAAGGGTATTGAATGAATCGTTTTTTTTTATTTTTATTTTTTATTTTTATTAGTGCATT 1420

ATTATTAAATTTTTTTTTTGTTTTGGGGTTTCAACGGTACCGCGTTGGGAGCAGGGAAGCGATAGCGGCCGGACAATTTTTTGCTTTTAT 1510

TTTCATTTTCATCTTCCTACCCAACCCCCTTGGTTCCACCGGTCGCGGCGGGGTCTTGTGGGTGGAGGAGTCCTAAATCCCGCACCTCGG 1600

AGGAATAAACATATTTCAATTTCATATCTTGGAATCAAAAGGCAT 1651

POLYADENILATION SITE

Obs: UNDERLINED THE SEQUENCED PEPTIDES USED TO DEDUCE DEGENERATED PRIMERS FOR CLONING

(b) NUCLEOTIDE SEQUENCE AND PEPTIDE SEQUENCE TcPA45

FIG. 17B

New Figure 18A
Divisional Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-02000

SEQ ID NO:8

```
                                                                                   ATGCGTAAAAGTGTCTGTCCCAAACAAAAATTTTTT   90
                                                                                    M  R  K  S  V  C  P  K  Q  K  F  F    12
TTTTCCGCCTTCCCATTTTTTTTTTTTTTTGTGTGTTTCCCTTGATCTCTCGAACAGGGCAGGAAAAGCTTCTGTTTGACCAAAAATAT  180
 F  S  A  F  P  F  F  F  F  F  C  V  F  P  L  I  S  R  T  G  Q  E  K  L  L  F  D  Q  K  Y   42
AAAATTATTAAGGGCGAGAAAAAAGAAAAGAAAAAAAATCAACGAGCAAACAGGAGAGAACACCAACAAAAAAGGGAAATTATGCGATTT  270
 K  I  I  K  G  E  K  K  E  K  K  K  N  Q  R  A  N  R  R  E  H  Q  Q  K  R  E  I  M  R  F   72
AAGAAATCATTCACATGCATCGACATGCATACGGAAGGTGAAGCAGCACGGATTGTGACGAGTGGTTTGCCACACATTCCAGGTTCGAAT  360
 K  K  S  F  T  C  I  D  M  H  T  E  G  E  A  A  R  I  V  T  S  G  L  P  H  I  P  G  S  N  102
ATGGCGGAGAAGAAAGCATACCTGCAGGAAAACATGGATTATTTGAGGCGTGGCATAATGCTGGAACCACGTGGTCATGATGATATGTTT  430
 M  A  E  K  K  A  Y  L  Q  E  N  M  D  Y  L  R  R  G  I  M  L  E  P  R  G  H  D  D  M  F  132
GGAGCCTTTTTATTTGACCCTATTGAAGAAGGCGCTGACTTGGGCATGGTATTCATGGATACCGGTGGCTATTTAAATATGTGTGGACAT  520
 G  A  F  L  F  D  P  I  E  E  G  A  D  L  G  M  V  F  M  D  T  G  G  Y  L  N  M  C  G  H  162
AACTCAATTGCAGCGGTTACGGCGGCAGTTGAAACGGGAATTGTGAGCGTGCCGGCGAAGGCAACAAATGTTCCGGTTGTCCTGGACACA  610
 N  S  I  A  A  V  T  A  A  V  E  T  G  I  V  S  V  P  A  K  A  T  N  V  P  V  V  L  D  T  192
CCTGCGGGGTTGGTGCGCGGTACGGCACACCTTCAGAGTGGTACTGAGAGTGAGGTGTCAAATGCGAGTATTATCAATGTACCCTCATTT  700
 P  A  G  L  V  R  G  T  A  H  L  Q  S  G  T  E  S  E  V  S  N  A  S  I  I  N  V  P  S  F  222
TTGTATCAGCAGGATGTGGTGGTTGTGTTGCCAAAGCCCTATGGTGAAGTACGGGTTGATATTGCATTTGGAGGCAATTTTTTCGCCATT  790
 L  Y  Q  Q  D  V  V  V  V  L  P  K  P  Y  G  E  V  R  V  D  I  A  F  G  G  N  F  F  A  I  252
GTTCCCGCGGAGCAGTTGGGAATTGATATCTCCGTTCAAAACCTCTCCAGGCTGCAGGAGGCAGGAGAACTTCTGCGTACTGAAATCAAT  880
 V  P  A  E  Q  L  G  I  D  I  S  V  Q  N  L  S  R  L  Q  E  A  G  E  L  L  R  T  E  I  N  282
CGCAGTGTGAAGGTTCAGCACCCTCAGCTGCCCCATATTAACACTGTGGACTGTGTTGAGATATACGGTCCGCCAACGAACCCGGAGGCA  970
 R  S  V  K  V  Q  H  P  Q  L  P  H  I  N  T  V  D  C  V  E  I  Y  G  P  P  T  N  P  E  A  312
```

FIG. 18A

```
AACTACAAGAACGTTGTGATATTTGGCAATCGCCAGGCGGATCGCTCTCCATGTGGGACAGGCACCAGCGCCAAGATGGCAACACTTTAT 1060
 N  Y  K  N  V  V  I  F  G  N  R  Q  A  D  R  S  P  C  G  T  G  T  S  A  K  M  A  T  L  Y   342
GCCAAAGGCCAGCTTCGCATCGGAGAGACTTTTGTGTACGAGAGCATACTCGGCTCACTCTTCCAGGGCAGGGTACTTGGGGAGGAGCGA 1150
 A  K  G  Q  L  R  I  G  E  T  F  V  Y  E  S  I  L  G  S  L  F  Q  G  R  V  L  G  E  E  R   372
ATACCGGGGGTGAAGGTGCCGGTGACCAAAGATGCCGAGGAAGGGATGCTCGTTGTAACGGCAGAAATTACTGGAAAGGCTTTTATCATG 1240
 I  P  G  V  K  V  P  V  T  K  D  A  E  E  G  M  L  V  V  T  A  E  I  T  G  K  A  F  I  M   402
GGTTTCAACACCATGCTGTTTGACCCAACGGATCCGTTTAAGAACGGATTCACATTAAAGCAGTAGATCTGGTAGAGCACAGAAACTATT 1330
 G  F  N  T  M  L  F  D  P  T  D  P  F  K  N  G  F  T  L  K  Q  *                           423
GGGGAACACGTGCGAACAGGTGCTGCTACGTGAAGGGTATTGAATGAATCGTTTTTTTTTATTTTTATTTTTTATTTTTATTAGTGCATT 1420

ATTATTAAATTTTTTTTTTGTTTTGGGGTTTCAACGGTACCGCGTTGGGAGCAGGGAAGCGATAGCGGCCGGACAATTTTTTGCTTTTAT 1510

TTTCATTTTCATCTTCCTACCCAACCCCCTTGGTTCCACCGGTCGCGGCGGGGTCTTGTGGGTGGAGGAGTCCTAAATCCCGCACCTCGG 1600

AGGAATAAACATATTTCAATTTCATATCTTGGAATCAAAAGGCAT                                               1651
```

POLYADENILATION SITE

Obs: UNDERLINED THE SEQUENCED PEPTIDES USED TO DEDUCE DEGENERATED PRIMERS FOR CLONING

NUCLEOTIDE SEQUENCE AND PEPTIDE SEQUENCE TcPA45

FIG. 18B

SEQ ID NO:9

```
                                                    CGAACAGGGCAGGAAAAGCTTCTGTTTGACCAAAAATAT  270
                                                     R  T  G  Q  E  K  L  L  F  D  Q  K  Y    72
AAAATTATTAAGGGCGAGAAAAAAGAAAAGAAAAAAAAATCAACGAGCAAACAGGAGAGAACACCAACAAAAAAGGGAAATTATGCGATTT  360
 K  I  I  K  G  E  K  K  E  K  K  K  N  Q  R  A  N  R  R  E  H  Q  Q  K  R  E  I  M  R  F  102
AAGAAATCATTCACATGCATCGACATGCATACGGAAGGTGAAGCAGCACGGATTGTGACGAGTGGTTTGCCACACATTCCAGGTTCGAAT  430
 K  K  S  F  T  C  I  D  M  H  T  E  G  E  A  A  R  I  V  T  S  G  L  P  H  I  P  G  S  N  132
ATGGCGGAGAAGAAAGCATACCTGCAGGAAAACATGGATTATTTGAGGCGTGGCATAATGCTGGAACCACGTGGTCATGATGATATGTTT  520
 M  A  E  K  K  A  Y  L  Q  E  N  M  D  Y  L  R  R  G  I  M  L  E  P  R  G  H  D  D  M  F  162
GGAGCCTTTTTATTTGACCCTATTGAAGAAGGCGCTGACTTGGGCATGGTATTCATGGATACCGGTGGCTATTTAAATATGTGTGGACAT  610
 G  A  F  L  F  D  P  I  E  E  G  A  D  L  G  M  V  F  M  D  T  G  G  Y  L  N  M  C  G  H  192
AACTCAATTGCAGCGGTTACGGCGGCAGTTGAAACGGGAATTGTGAGCGTGCCGGCGAAGGCAACAAATGTTCCGGTTGTCCTGGACACA  700
 N  S  I  A  A  V  T  A  A  V  E  T  G  I  V  S  V  P  A  K  A  T  N  V  P  V  V  L  D  T  222
CCTGCGGGGTTGGTGCGCGGTACGGCACACCTTCAGAGTGGTACTGAGAGTGAGGTGTCAAATGCGAGTATTATCAATGTACCCTCATTT  790
 P  A  G  L  V  R  G  T  A  H  L  Q  S  G  T  E  S  E  V  S  N  A  S  I  I  N  V  P  S  F  252
TTGTATCAGCAGGATGTGGTGGTTGTGTTGCCAAAGCCCTATGGTGAAGTACGGGTTGATATTGCATTTGGAGGCAATTTTTTCGCCATT  880
 L  Y  Q  Q  D  V  V  V  V  L  P  K  P  Y  G  E  V  R  V  D  I  A  F  G  G  N  F  F  A  I  282
GTTCCCGCGGAGCAGTTGGGAATTGATATCTCCGTTCAAAACCTCTCCAGGCTGCAGGAGGCAGGAGAACTTCTGCGTACTGAAATCAAT  970
 V  P  A  E  Q  L  G  I  D  I  S  V  Q  N  L  S  R  L  Q  E  A  G  E  L  L  R  T  E  I  N  312
CGCAGTGTGAAGGTTCAGCACCCTCAGCTGCCCCATATTAACACTGTGGACTGTGTTGAGATATACGGTCCGCCAACGAACCCGGAGGCA 1060
 R  S  V  K  V  Q  H  P  Q  L  P  H  I  N  T  V  D  C  V  E  I  Y  G  P  P  T  N  P  E  A  342
AACTACAAGAACGTTGTGATATTTGGCAATCGCCAGGCGGATCGCTCTCCATGTGGGACAGGCACCAGCGCCAAGATGGCAACACTTTAT 1150
 N  Y  K  N  V  V  I  F  G  N  R  Q  A  D  R  S  P  C  G  T  G  T  S  A  K  M  A  T  L  Y  372
```

FIG. 19A

```
GCCAAAGGCCAGCTTCGCATCGGAGAGACTTTTGTGTACGAGAGCATACTCGGCTCACTCTTCCAGGGCAGGGTACTTGGGGAGGAGCGA 1240
 A  K  G  Q  L  R  I  G  E  T  F  V  Y  E  S  I  L  G  S  L  F  Q  G  R  V  L  G  E  E  R   402
ATACCGGGGGTGAAGGTGCCGGTGACCAAAGATGCCGAGGAAGGGATGCTCGTTGTAACGGCAGAAATTACTGGAAAGGCTTTTATCATG 1330
 I  P  G  V  K  V  P  V  T  K  D  A  E  E  G  M  L  V  V  T  A  E  I  T  G  K  A  F  I  M   423
GGTTTCAACACCATGCTGTTTGACCCAACGGATCCGTTTAAGAACGGATTCACATTAAAGCAGTAGATCTGGTAGAGCACAGAAACTATT 1420
 G  F  N  T  M  L  F  D  P  T  D  P  F  K  N  G  F  T  L  K  Q  *
GGGGAACACGTGCGAACAGGTGCTGCTACGTGAAGGGTATTGAATGAATCGTTTTTTTTTATTTTTATTTTTTATTTTTATTAGTGCATT 1510

ATTATTAAATTTTTTTTTTGTTTTGGGGTTTCAACGGTACCGCGTTGGGAGCAGGGAAGCGATAGCGGCCGGACAATTTTTTGCTTTTAT 1600

TTTCATTTTCATCTTCCTACCCAACCCCCTTGGTTCCACCGGTCGCGGCGGGGTCTTGTGGGTGGAGGAGTCCTAAATCCCGCACCTCGG 1651

AGGAATAAACATATTTCAATTTCATATCTTGGAATCAAAAGGCAT
```

POLYADENILATION SITE

Obs: UNDERLINED THE SEQUENCED PEPTIDES USED TO DEDUCE DEGENERATED PRIMERS FOR CLONING

NUCLEOTIDE SEQUENCE AND PEPTIDE SEQUENCE TcPA45

FIG. 19B

New Figure 20
Divisional Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-02000

SEQ ID NO:10

<u>SIGNAL PEPTIDE</u>

<u>ATG</u>CGTAAAAGTGTCTGTCCCAAACAAAAATTTTTT

<u>TTTTCCGCCTTCCCATTTTTTTTTTTTTTTTGTGTGTTTCCCTTGATCTCT</u>

NUCLEOTIDE SEQUENCE OF SIGNAL SEQUENCE TcPA45

FIG. 20

New Figure 21A
Divisional Application of 09/725,945
Inventors: Minoprio et al.
Attorney Docket No. 03495-0200-02000

SEQ ID NO:11

```
ATGCGATTT 360
M R F 102
AAGAAATCATTCACATGCATCGACATGCATACGGAAGGTGAAGCAGCACGGATTGTGACGAGTGGTTTGCCACACATTCCAGGTTCGAAT 430
K K S F T C I D M H T E G E A A R I V T S G L P H I P G S N 132
ATGGCGGAGAAGAAAGCATACCTGCAGGAAAACATGGATTATTTGAGGCGTGGCATAATGCTGGAACCACGTGGTCATGATGATATGTTT 520
M A E K K A Y L Q E N M D Y L R R G I M L E P R G H D D M F 162
GGAGCCTTTTTATTTGACCCTATTGAAGAAGGCGCTGACTTGGGCATGGTATTCATGGATACCGGTGGCTATTTAAATATGTGTGGACAT 610
G A F L F D P I E E G A D L G M V F M D T G G Y L N M C G H 192
AACTCAATTGCAGCGGTTACGGCGGCAGTTGAAACGGGAATTGTGAGCGTGCCGGCGAAGGCAACAAATGTTCCGGTTGTCCTGGACACA 700
N S I A A V T A A V E T G I V S V P A K A T N V P V V L D T 222
CCTGCGGGGTTGGTGCGCGGTACGGCACACCTTCAGAGTGGTACTGAGAGTGAGGTGTCAAATGCGAGTATTATCAATGTACCCTCATTT 790
P A G L V R G T A H L Q S G T E S E V S N A S I I N V P S F 252
TTGTATCAGCAGGATGTGGTGGTTGTGTTGCCAAAGCCCTATGGTGAAGTACGGGTTGATATTGCATTTGGAGGCAATTTTTTCGCCATT 880
L Y Q Q D V V V V L P K P Y G E V R V D I A F G G N F F A I 282
GTTCCCGCGGAGCAGTTGGGAATTGATATCTCCGTTCAAAACCTCTCCAGGCTGCAGGAGGCAGGAGAACTTCTGCGTACTGAAATCAAT 970
V P A E Q L G I D I S V Q N L S R L Q E A G E L L R T E I N 312
CGCAGTGTGAAGGTTCAGCACCCTCAGCTGCCCCATATTAACACTGTGGACTGTGTTGAGATATACGGTCCGCCAACGAACCCGGAGGCA 1060
R S V K V Q H P Q L P H I N T V D C V E I Y G P P T N P E A 342
AACTACAAGAACGTTGTGATATTTGGCAATCGCCAGGCGGATCGCTCTCCATGTGGGACAGGCACCAGCGCCAAGATGGCAACACTTTAT 1150
N Y K N V V I F G N R Q A D R S P C G T G T S A K M A T L Y 372
GCCAAAGGCCAGCTTCGCATCGGAGAGACTTTTGTGTACGAGAGCATACTCGGCTCACTCTTCCAGGGCAGGGTACTTGGGGAGGAGCGA 1240
A K G Q L R I G E T F V Y E S I L G S L F Q G R V L G E E R 402
```

FIG. 21A

```
ATACCGGGGGTGAAGGTGCCGGTGACCAAAGATGCCGAGGAAGGGATGCTCGTTGTAACGGCAGAAATTACTGGAAAGGCTTTTATCATG 1330
 I  P  G  V  K  V  P  V  T  K  D  A  E  E  G  M  L  V  V  T  A  E  I  T  G  K  A  F  I  M   423
GGTTTCAACACCATGCTGTTTGACCCAACGGATCCGTTTAAGAACGGATTCACATTAAAGCAGTAGATCTGGTAGAGCACAGAAACTATT 1420
 G  F  N  T  M  L  F  D  P  T  D  P  F  K  N  G  F  T  L  K  Q  *
GGGGAACACGTGCGAACAGGTGCTGCTACGTGAAGGGTATTGAATGAATCGTTTTTTTTTATTTTTATTTTTTATTTTTATTAGTGCATT 1510

ATTATTAAATTTTTTTTTTGTTTTGGGGTTTCAACGGTACCGCGTTGGGAGCAGGGAAGCGATAGCGGCCGGACAATTTTTTGCTTTTAT 1600

TTTCATTTTCATCTTCCTACCCAACCCCCTTGGTTCCACCGGTCGCGGCGGGGTCTTGTGGGTGGAGGAGTCCTAAATCCCGCACCTCGG 1651

AGGAATAAACATATTTCAATTTCATATCTTGGAATCAAAAGGCAT
```

FIG. 21B